



Paternity Test Knowledge

Vocabulary

Marker: name of a short tandem repeat (STR) which is specifically located on a chromosome. STR number are highly variable between individuals. .

Allele: number of short tandem repeat (STR). Each autosomal STR marker has two alleles, one from mother, another one from father

Paternity Index (PI): a statistic calculation number to indicate the strength of alleged father passes his allele to the child comparing to a random individual to pass the allele to child in a chosen population group

Combined Paternity Index (CPI): The Combined Paternity Index (CPI), which is calculated by multiplying all paternity index, indicates the overall strength of the genetic evidence.

1, what is mismatched marker in paternity test?

Every autosomal marker has two alleles, one allele from father, and another allele from mother. For a marker, if tested child's two alleles differ from alleged father's two allele, that marker is called a mismatched marker. Paternity Index (PI) for that marker is 0

For example: marker D5S818, alleged father's allele data is 9, 13 and child's allele data is 10, 12. So, marker D5S818 is a mismatched marker, since child's 10, 12 don't come from alleged father's 9, 13. Paternity index is 0. Sometimes, mutation causes marker's mismatch.



2, what if a single marker mismatches in paternity test?

We can test alleged father's closest relatives such as brothers if they are available for testing. We can see if an alleged father's closest relative is child's biological father. We can also use X-STR or Y-STR test to confirm or exclude paternity.

Single marker's mismatch can be caused by mutation. We can use that marker's mutation rate to calculate marker's paternity index. Then, calculate the CPI and Possibility of paternity to see if the number is higher enough to make a conclusion. We can also use X-STR or Y-STR test to confirm or exclude paternity.

3, what if two markers mismatch in paternity test?

It is possible that two markers' mismatch can also be caused by mutation. But the possibility is very low. We can test alleged father's closest relatives such as brothers if they are available for testing. We can see if an alleged father's closest relative is child's biological father. We can also use X-STR or Y-STR test to confirm or exclude paternity.

4, what if three or more markers mismatch in paternity test?

We can make a conclusion that the alleged father is excluded to be the biological father of child.



5, what does the Paternity Test Report tell you?

In a NOT Exclusion Paternity Test Report, you can see a table like the sample report below

Paternity Test Report: Results

(Private Test, for personal knowledge)

Case Number: PA21088	Paternity Index (PI)	Child Name: Paul	Alleged Father Name: Bob
STR Locus		Alleles	Alleles
CSF1PO	0.6466632178	11, 12	10, 12
D10S1248	1.994642916	13, 15	13, 15
D12S391	1.426411865	19, 22	18, 19
D13S317	2.309237875	8, 9	8, 8
D16S539	1.310959622	11, 12	9, 11
D18S51	1.154849884	13, 16	13, 15
D19S433	1.672408027	13, 2, 14	14, 14
D1S1656	1.865858209	13, 14	13, 16
D21S11	1.243905473	29, 30	29, 32.2
D22S1045	2.487562189	11, 11	11, 16
D2S1338	5.794980388	17, 19	17, 19
D2S441	8.091423948	11, 3, 15	10, 11.3
D3S1358	1.440865505	15, 16	15, 16
D5S818	0.9151720353	11, 13	11, 12
D7S820	2.852538505	8, 12	12, 12
D8S1179	1.243905473	14, 16	13, 14
FGA	3.463296399	25, 26	23, 25
Penta D	24.27184466	9, 14	12, 14
Penta E	4.409171076	16, 22	10, 16
SE33	6.469598965	19, 28.2	28.2, 28.2
TH01	1.496787998	7, 9	7, 9
TPOX	0.9150805271	8, 12	8, 8
vWA	2.552322614	14, 17	14, 14
Combined Paternity Index: 114224147.6		Probability of Paternity > 99.9999%	

In table's 1st column: markers tested

2nd column: Paternity Index (PI), all data are not 0

3rd column: Child's allele's data for each marker, two number each marker.

4th column: Alleged father's allele's data for each marker, two number each marker.



In your NOT Exclusion report table, you can see column 3 and column 4 allele data, at least one data matches for each marker, circled with red pen. Combined Paternity Index > 100, circled with green pen. Probability of paternity > 99.99%, circled with green pen

In an Exclusion Paternity Test Report, you can see a table like another sample report below

Paternity Test Report: Results

(Private Test, for personal knowledge)

Case Number: PA21088	Paternity Index (PI)	Child Name: Lily	Alleged Father Name: Alex	
STR Locus		Alleles	Alleles	
CSF1PO	2.487562189	10, 13	10, 10	
D10S1248	1.994642916	13, 15	13, 15	
D12S391	0.9511220997	18, 19	18, 22	
D13S317	2.309237875	8, 8	8, 9	
D16S539	1.405678943	9, 9	9, 12	
D18S51	2.771895787	15, 15	15, 16	
D19S433	1.672408027	14, 14	13, 14	
D1S1656	1.865858209	13, 14	13, 17	
D21S11	2.962687173	30, 32.2	30, 32.2	
D22S1045	0	11, 15	16, 17	X
D2S1338	4.409171076	17, 18	17, 22	
D2S441	0	10, 10	11.3, 15	X
D3S1358	1.366120219	15, 17	15, 15	
D5S818	0	9, 13	10, 12	X
D7S820	2.377296259	10, 12	10, 12	
D8S1179	0	13, 16	12, 14	X
FGA	1.212657614	23, 24	23, 25	
Penta D	0.7951653944	9, 12	9, 14	
Penta E	4.409171076	13, 16	16, 17	
SE33	3.234799483	28.2, 31.2	19, 28.2	
TH01	0.5639521769	9, 9.3	7, 9	
TPOX	5.387931034	9, 12	8, 12	
vWA	0.7951653944	17, 18	14, 17	

Combined Paternity Index: 0

Probability of Paternity is 0 %



In table's 1st column: markers tested

2nd column: Paternity Index (PI), some data in this column is 0, circled with red pen.

3rd column: Child's allele's data for each marker, two number each marker.

4th column: Alleged father's allele's data for each marker, two number each marker.

In your Exclusion report table, you can see column 3 and column 4 allele data, some marker's data do not matches, circled with red pen. Combined Paternity Index 0, circled with blue pen. Probability of paternity 0, circled with blue pen